NICASALUD
An Analysis of Monitoring Data Collected by Four NICASALUD PVOs
After One Year of Work in the Department of Jinotega

Moving Toward Recovery from Hurricane Mitch in Nicaragua
December 2000—January 2001

June 2001

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ACRONYMS

CRS	-	Catholic Relief Services
DCM	-	Diarrhea Care Management
DHS	-	Demographic Health Survey
DPT	-	Diphtheria, Pertussis, and Tetanus
EBF	-	Exclusive Breastfeeding
EPI	-	Expanded Program on Immunization
HIV/AIDS	-	Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome
HOPE	-	Project HOPE
IMCI	-	Integrated Management of Childhood Illness
IR	-	Intermediate Results
LQAS	-	Lot Quality Assurance Sampling
MINSA	-	Ministry of Health
MNC	-	Maternal and Newborn Care
NGO	-	Non-Governmental Organization
ORS	-	Oral Rehydration Salts
Partners	-	Partners of the Americas
PCI	-	Project Concern International
PCM	-	Pneumonia Case Management
PVO	-	Private Voluntary Organization
SA	-	Supervision Area
USAID	-	United States Agency for International Development

INTRODUCTION

NICASALUD, a network of private voluntary organizations (PVOs) and non-governmental organizations (NGOs), was established to address problems of the people and their communities in areas affected by Hurricane Mitch. In September 1999, the United States Agency for International Development (USAID) funded NICASALUD to achieve a public health intermediate result (IR): *Health status of Mitch-affected families maintained or improved.* Specifically, USAID/Nicaragua requested NICASALUD to propose activities to work under their IR1.1: *Increased access to health services in Mitch-affected areas*. In response, NICASALUD members planned to restore primary health care services (immunizations, child survival, and reproductive health) in small communities and rural areas affected by Hurricane Mitch.

This document reports selected results of a midterm monitoring survey of NICASALUD-supported areas conducted during December 2000 and January 2001 by four PVO members of NICASALUD working in the Department of Jinotega in Central Nicaragua: Catholic Relief Services (CRS), Partners of the Americas (Partners), Project Concern International (PCI), and Project HOPE. Our purpose in this report is to discuss trends as well as their validity. The original baseline survey report, carried out during December 1999—January 2000 (Valadez et al., 2001, Campos et al., 2001), can be found at www.ngonetworks.org

Catchment Areas for the Four Partners Conducting Mid-Term Evaluations
NICASALUD's four Jinotega PVO partners work in different municipalities (the political administrative level below the department) (Table 1). Their geographical distribution is represented on the map that follows. Organizations listed together in the same text box on the map work in the same geographical areas.

Table 1: Hurricane Mitch-Affected Departments and Municipalities in which the Four PVO Partners of NICASALUD Work		
PVO	**Department**	**Municipalities**
CRS	Jinotega	Wiwilí
HOPE	Jinotega	Wiwilí, Pantasma, Jinotega
Partners	Jinotega	Jinotega
PCI	Jinotega	Yalí, La Concórdia, San Rafael del Norte, Pantasma

Figure 1: Location of PVOs That Collected Monitoring Data for NICASALUD Funded Projects

Selected Interventions

During the first year of work, the PVOs implemented priority interventions, which were developed using baseline survey information. Monitoring data were collected for these interventions alone. As the selection of these interventions was based on local needs, the four PVOs in Jinotega overlap for some interventions, while for others they do not. Table 2 lists the four organizations by the interventions they are implementing.

Table 2: Four PVO Members of NicaSalud by the Intervention Areas Implemented in Jinotega, Nicaragua				
Interventions	**Catholic Relief Services**	**Project HOPE**	**Partners of the Americas**	**Project Concern International**
Maternal & Newborn Care		X	X	X
Pneumonia Case Management	X	X	X	
Diarrhea Case Management	X	X	X	
Expanded Program on Immunization & Vitamin A	X	X	X	
Nutrition		X (GM)		
Breastfeeding	X	X	X	
HIV/AIDS/STI			X	X

GM = Growth Monitoring

X = Implemented Intervention

METHODS

Training Workshops and Survey Methodology
NICASALUD organized a refresher training for managers and supervisors from the four participating PVOs. The Monitoring and Evaluation Officer at NICASALUD and a consultant facilitated the workshops. No outside data collectors were employed for the monitoring survey. The facilitators provided technical assistance during an initial two days of data collection, and the PVOs managed the process without further facilitation thereafter. The managers of each PVO supervised data collection teams of health promoters.

Data were collected using a set of short questionnaires that included questions concerning only the priority interventions. The NICASALUD PVOs used the Lot Quality Assurance Sampling (LQAS) method for data collection in both the baseline and monitoring surveys (Valadez, 1991, Wolfe and Black, 1989, Robertson et al., 1997). This method as used by NICASALUD is explained in the baseline report (Valadez et al., 2001). However, two aspects of the method are explained here since they are referred to elsewhere in the text. Each PVO's catchment area was divided into a small number of management units called Supervision Areas (SAs). The supervisor responsible for an SA collected an LQAS sample of 19 observations. Using LQAS principles, the PVO classified the various SAs in terms of whether they had reached annual coverage benchmarks. Those data were then added together to calculate coverage proportions for the PVO catchment area and for all of Jinotega. The latter coverage measure is used as the basis of this report.

Parallel Sampling

Parallel sampling is an approach to data collection in which a set of short focused questionnaires is developed, with each instrument pertaining to a particular group of people served by the project. Households are randomly selected and within each household, individuals are identified to interview within each group. The four Jinotega PVOs sampled three groups of respondents (or universes) related to their interventions: mothers of children ages 0-11 months, mothers of children ages 12-23 months, and non-pregnant women ages 15-49 years. They prepared a separate short questionnaire for each universe. The three questionnaires taken together are called a *set*. See the baseline survey report for a full discussion of the sampling method (Valadez et al., 2001).

Table 3: Sampling Universes for Each of the Intervention Categories Included in the Monitoring Survey			
Intervention Category	**Sampling Universe**		
	Children 0-11 Months	Children 12-23 Months	Women 15-49 Years
Reproductive Health			
Maternal and Newborn Care: Behavior	X		
Maternal and Newborn Care: Knowledge			X
Child Survival Interventions			
Diarrhea Care Management: Knowledge	X	X	
Pneumonia Case Management: Knowledge	X	X	
Diarrhea Care Management: Behavior	X[**]	X[**]	
Pneumonia Case Management: Behavior	X[**]	X[**]	
Exclusive Breastfeeding	X[*]		
Nutrition: Vitamin A		X	
Expanded Program on Immunization: Child Vaccinations and TT	X	X	
HIV/AIDS/STI: Knowledge and Behavior			X
[*] Mothers with Children 0-5 Months [**] Mothers with Sick Children in the Last Two Weeks with Corresponding Symptoms Disease Category			

Tabulation Workshops

Together, the four Jinotega PVOs collected data from a total of 16 SAs. On average, each PVO needed approximately 4-5 days to collect the 19 sets of data in each of their SAs. A two-day tabulation workshop was held shortly after the data were collected in which the supervisors and their managers hand-tabulated results using tabulation sheets. The four Jinotega PVOs used these results for making midcourse corrections to their programs. The results presented in this report are taken from the hand tabulations of each PVO.

RESULTS

The purpose of this section is to track key indicators from the baseline survey carried out at the beginning of the project and compare them with monitoring data collected one year later. In instances in which pre-Hurricane Mitch data are available from the 1998 DHS, these data are also used to shed some light on the recovery process by comparing them with baseline and monitoring data. Please note that the Jinotega DHS sampled all of Jinotega, while the NICASALUD data are confined to the project area. Therefore, we cannot assume that the 1998 DHS data are a precise measure of behavior and knowledge in the project area.

Breastfeeding and Use of Oral Rehydration Salts (ORS)
Figure 1 tracks two indicators. First, according to the pre-Hurricane Mitch 1998 DHS, 28 percent of Nicaraguan women exclusively breastfed children ages 0-5 months.[1] The post-Hurricane Mitch project baseline revealed a higher proportion of exclusively breastfeeding women (37%). However, by January 2001, exclusive breastfeeding prevalence increased to 65 percent. This was a period also marked by intensive work of the four NICASALUD PVOs as well as by others working in Jinotega. Breastfeeding was also promoted nationally as a main strategy of the Ministry of Health (MINSA).
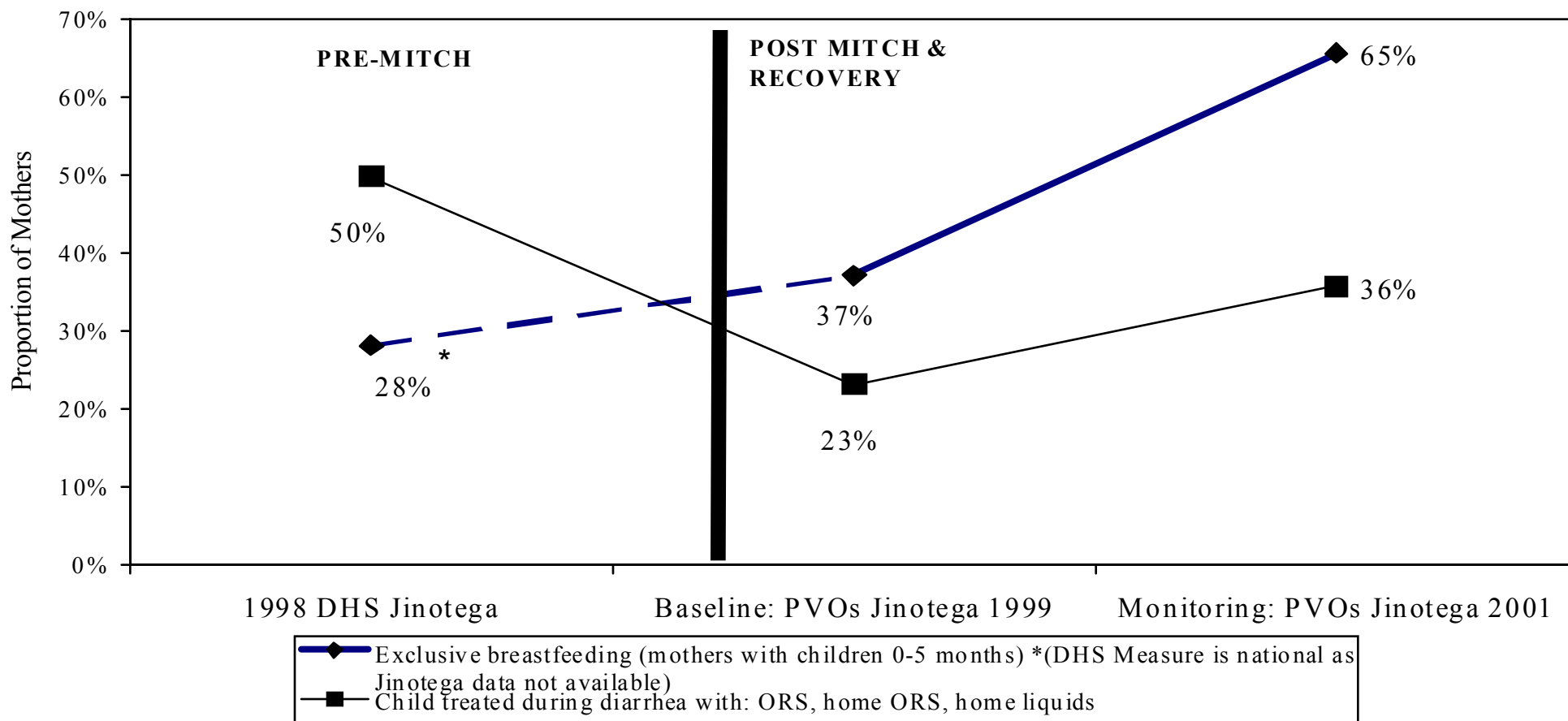
At first inspection, this increase seemed to be an inordinately high improvement to take place in one year of work. However, the improvements in Jinotega are consistent with other findings, which show a direct correlation between household visitation by community health workers and increases in exclusive breastfeeding (Morrow et al., 1999, Haider et al., 1999, Haider et al., 2000).

The second indicator is the proportion of *mothers with children 0-23 months who had diarrhea in the last two weeks who were treated by their mothers either with ORS, the ORS home preparation, or other home liquids*. The Figure 1 shows the impact of the hurricane. While the pre-Mitch DHS shows 50 percent of mothers using ORS, in the post-Mitch baseline, only 23 percent of mothers rehydrated their children at home. However, by January 2001, after one year of work, the monitoring data reveal an increase to 36 percent of mothers practicing home rehydration. Despite this improvement, additional recovery is needed for Jinotega to return to a pre-Mitch level.

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[1] Exclusive breastfeeding data were not reported for Jinotega in the 1998 DHS.

**Figure 1: Exclusive Breastfeeding and
Home Rehydration of Children with Diarrhea:
DHS, Baseline & Monitoring Data for Jinotega: 1998-2001**

PRE-MITCH

POST MITCH &
RECOVERY

65%

50%

37%

36%

28%

*

23%

Proportion of Mothers

70%

60%

50%

40%

30%

20%

10%

0%

1998 DHS Jinotega   Baseline: PVOs Jinotega 1999   Monitoring: PVOs Jinotega 2001

Exclusive breastfeeding (mothers with children 0-5 months) *(DHS Measure is national as Jinotega data not available)

Child treated during diarrhea with: ORS, home ORS, home liquids

Use of Clinical Care

Figure 2 includes three indicators related to care-seeking behavior of Jinotega mothers. The first indicator, *mothers of children 0-23 months of age who have had diarrhea in the last two weeks who sought medical assistance*, was also measured in the 1998 DHS. The impact of the hurricane may be evident in the eight percentage point decline from 31 percent (1998 DHS) to 22 percent of mothers seeking assistance in the post-Mitch baseline. However, by January 2001, recovery has taken place, as 47 percent of mothers were seeking treatment for their children with diarrhea. The monitoring data reveal a 25 percentage point increase above the post-Mitch baseline and 16 percentage points above the pre-Mitch DHS.

The second indicator, *mothers of children 0-23 months who had pneumonia symptoms in the last two weeks who sought medical assistance*, reveals a similar pattern. The pre-Mitch DHS measure shows 44 percent of mothers seeking treatment for children with pneumonia symptoms, which decreases to 36 percent in the post-Mitch baseline. However, the January 2001 monitoring data displays an improvement, as 52 percent of mothers were seeking treatment for children with pneumonia symptoms after one year of the project.

The third indicator is *mothers of children 0-11 months who delivered with a clinically trained provider*. As the pre-Mitch 1998 DHS measure is 35 percent and the post-Mitch baseline is 41 percent, no apparent impact of the hurricane is evident. However, by January 2001, clinicians assisted 58 percent of deliveries. Although the NICASALUD PVOs deserve credit for increases at Time-3, it is important to note that other intensive efforts to improve safe motherhood were undertaken during this time by MINSA and other organizations working in Jinotega. Provision of services throughout the *crisis* period may have been associated with the continual increase in clinically assisted deliveries. Therefore, while the PVO partners may have contributed to the continual enhanced use of services, other promotional activities contributed to the trend displayed in Figure 2.

**Figure 2: Use of Clinical Care for Delivery, and
Diarrhea and Pneumonia Treatment:
DHS, Baseline & Monitoring Data for Jinotega: 1998-2001**
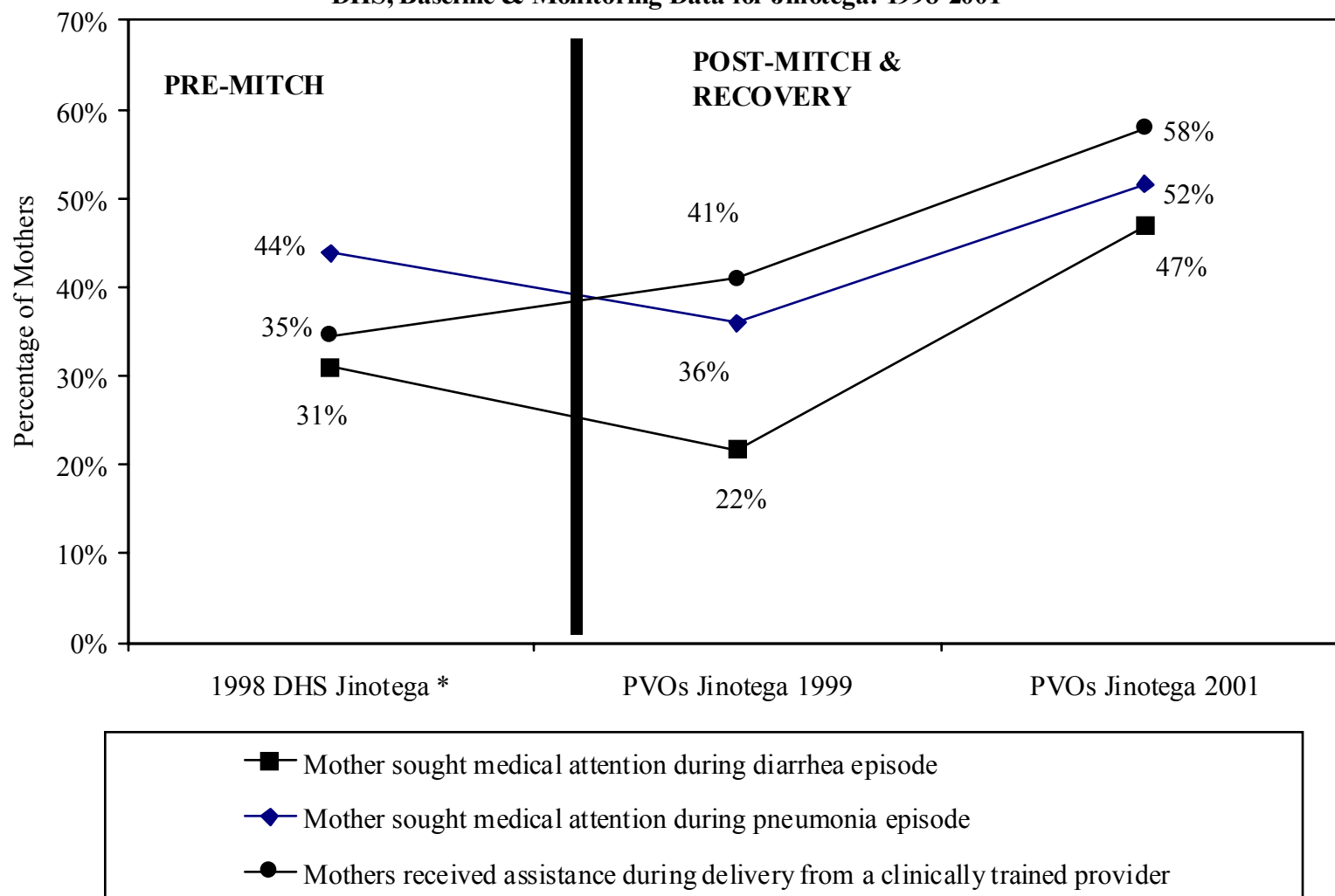
Knowledge of Preventive Behavior

Three indicators are presented in this section (Figure 3). The first indicator, *mothers know two or more danger signs of dehydration*, reveals a baseline coverage of 34 percent. By January 2001, the monitoring data indicate that the proportion of mothers knowing dehydration signs increased to 75 percent.

The remaining two indicators presented in this section revealed technical problems with the program monitoring system that need modification. The second indicator, *mothers know how to correctly prepare ORS,* required respondents to make oral rehydration solution from an envelope of ORS in front of the interviewer. Using a checklist included in the questionnaire, the interviewer determines whether three essential steps were performed, namely:

- Use 1 liter of water
- Use 1 packet of ORS
- Mix the liquid until the salts are completely dissolved

Although three steps alone were used during the baseline to judge knowledge, two additional steps were included during program monitoring:

- Mother washes her hands with soap and water prior to preparing the oral rehydration solution
- Boil the water or add a water purifier to it before using

Unfortunately, this amendment renders the monitoring data, in its current state, impossible to interpret. A negative change is displayed in Figure 3 showing the baseline measure (57%) decreasing to 39 percent. The decrease is probably due to assessing performance using five steps instead of three. It is likely that many mothers did not wash their hands or boil/purify water.

We recommend that the PVOs recode their questionnaires using only the first three steps. This slight modification will allow the PVOs to compare the baseline with the monitoring data.

The third indicator, *mothers who know two or more pneumonia danger signs*, displays a dramatic increase in the proportion of mothers satisfying this criterion (3% to 76%). However, this increase is also due to a technical artifact similar to the preceding indicator. During the baseline, any two of three symptoms had to be mentioned, namely:

- Rapid breathing
- Intercostal in drawing
- Unable to drink

However, during the monitoring, six additional symptoms were permitted as correct responses. They included:

- Difficulty breathing
- Severe malnutrition
- Unable to breastfeed

- Fever
- Cough
- Continuous crying

Inclusion of these symptoms presents a construct validity problem since they are not necessarily associated with lower respiratory infections, but may also be associated with other conditions. As the purpose of the indicator is to measure mothers' ability to identify lower respiratory infections, inclusion of these six additional responses as acceptable responses creates the situation in which a mother can be incorrectly judged as being able to identify pneumonia when she has not mentioned *any* of the first three symptoms.

Again, we recommend that the PVOs return to their questionnaires and recode the results of this indicator using the first three criteria only. This slight modification will allow the PVOs to compare the baseline with the monitoring data for pneumonia and eliminate the potential confusion that results by including other unrelated symptoms.
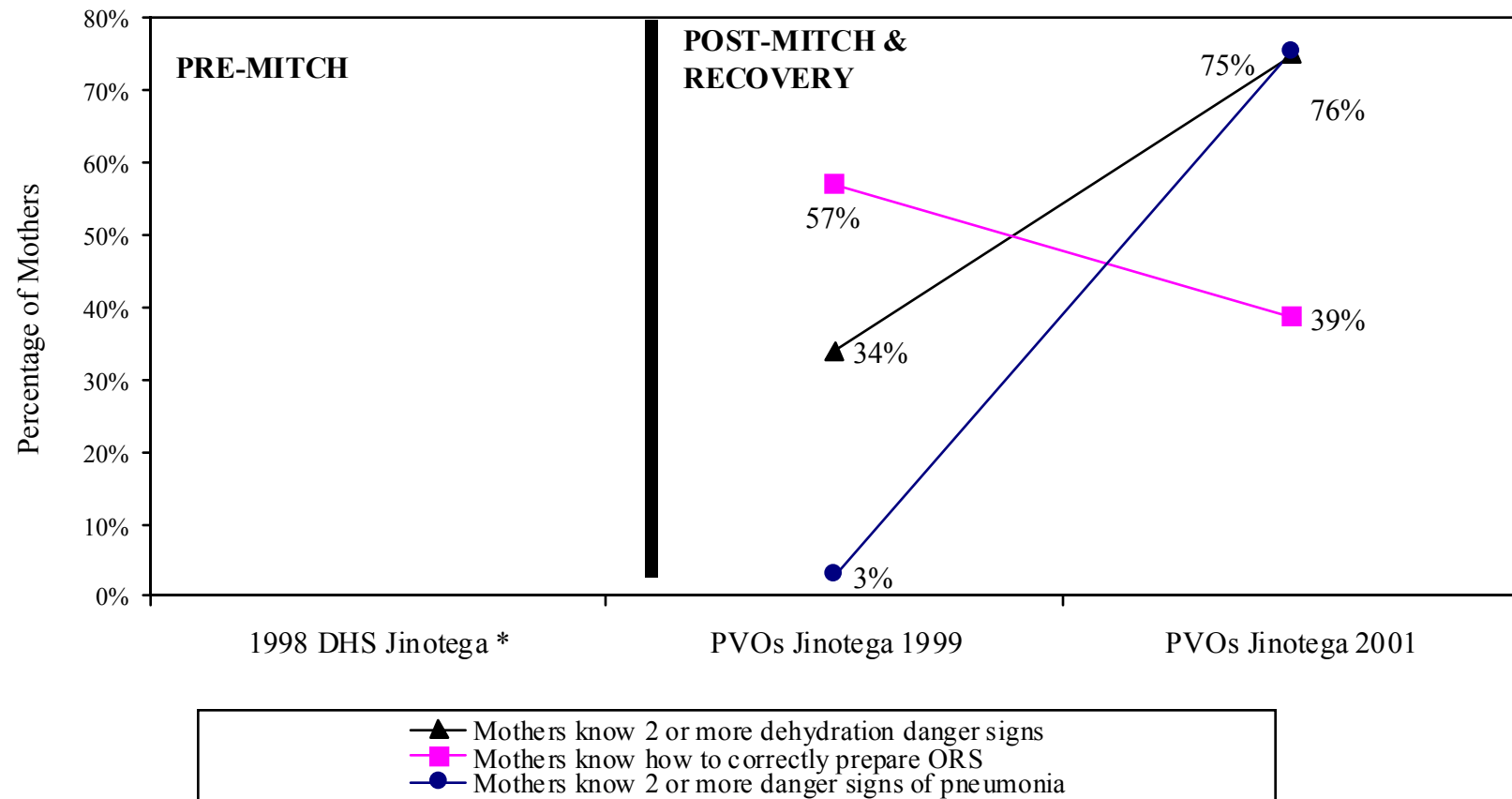

CONCLUSION

This brief report assesses eight indicators monitoring programs of four NICASALUD PVOs in Jinotega. Monitoring data collected during December 2000-January 2001 revealed that USAID/Nicaragua's IR is being met for six of the eight indicators. Monitoring data for six indicators indicate that related health services have improved. All show recovery from the post-Mitch baseline measure. Four indicators display findings suggesting that conditions in Jinotega may have improved beyond those found in 1998. This trend is suggested since coverage proportions for the current monitoring data have increased beyond the DHS 1998 values.

The two remaining indicators suggest that improvements need to be made to the NICASALUD monitoring system. Changes made to the way indicators were coded during the monitoring render the data unusable. Our recommendation is to continue using the same criteria for assessing indicators as were used in the 1999 baseline survey. Despite these two problems, the current M&E system of NICASALUD appears to be producing valuable information for program management decision-making that is tracking improvements in public health services.

Figure 3: Knowledge of Dehydration and Pneumonia Danger Signs, and ORS Preparation: DHS, Baseline & Monitoring Data for Jinotega: 1998-2001

PRE-MITCH

POST-MITCH & RECOVERY

75%

76%

57%

34%

39%

3%

1998 DHS Jinotega *

PVOs Jinotega 1999

PVOs Jinotega 2001

Percentage of Mothers

Mothers know 2 or more dehydration danger signs
Mothers know how to correctly prepare ORS
Mothers know 2 or more danger signs of pneumonia

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